

Development status and strategy of upper limb gross movement in children

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Abstract: Children's motor development plays a vital role in individual growth, height and weight, intellectual development, growth and development. In order to understand the development of children's upper limb gross movement, according to the gross muscle test table to test, and for the lack of solutions to find solutions to improve children's core literacy. Through the method of literature, expert interview, measurement, etc, this paper tests 30 children randomly selected from the senior class of the affiliated kindergarten of Henan Polytechnic University. Through data processing and analysis, the following conclusions are drawn. The motor development of the children in the senior class of the affiliated kindergarten of Henan Polytechnic University is at a good level of development; The basic situation of motor development of 5-6 years old children gradually increased with age; The motor development of some children is slightly lagging behind, and the motor development level of female children is relatively slow, and the gap between the motor development level of male and female children is gradually narrowing with the growth of age; After the comparison of the situation before and after the correction of the children, no matter from the movement score or throwing score, there has been a significant improvement.

Keywords: children; Action; Movement development; Gross motor development

1. Purpose of study

In order to understand the muscle-motor development status of senior class students in the affiliated kindergarten of Henan Polytechnic University, the test was conducted according to the gross muscle test index, and the measured data were evaluated and analyzed, so as to more clearly discover the good and bad of children's motor development, recognize the current situation of their muscle-motor development, and understand the level of muscle development of children at this age. To find out the reasons leading to the unbalanced development of motor development of children, find solutions for these reasons, strengthen the reform of relevant teaching content, provide data support for the formulation of relevant countermeasures to promote the development of motor development of children, and finally improve the core literacy of children^[1].

2. Research Methods

2.1 Research Objects

The object of this study is the development status of gross movements of children in four large classes in the affiliated kindergarten of Henan Polytechnic University.

The test objects were 30 children randomly selected from four major classes of the affiliated kindergarten of Henan Polytechnic University.

2.2 Research Methods

2.2.1 Literature data method

Extensively inquire domestic and foreign materials and data related to the muscle motor test and development of children from CNKI, Wanfang, Baidu and library, consult relevant literature and books, compare and sort out the materials according to the research purpose and research content, so as to lay a theoretical foundation. And according to physiology, sports training and other professional theoretical

knowledge to try to correct children's movements, with scientific methods to guide children to exercise^[2].

2.2.2 Expert interview method

Use the interview method through email, phone, wechat, face-to-face and other forms; Interviews were conducted with relevant experts and teachers of kindergartens affiliated to Henan Polytechnic University on the current situation of children's motor development, to understand the importance they attach to children's motor development and how to carry out daily exercise activities. In order to enhance the scientificity and rationality of this paper and ensure the smooth progress of the research, the relevant interview outline is set up in advance.

2.2.3 Measurement method

(1) Measuring objects

Thirty children were randomly selected from four large classes in the affiliated kindergarten of Henan Polytechnic University.

(2) Measurement Scale

The measurement scale is further refined according to the third edition of Children's gross Motor Development Test Standard (TGMD-3) invented by Professor DaleA Ulrich of the University of Michigan, each test action is refined into 5 points, and children get "1" points for each action standard, and "0" for those who fail to achieve it. TGMD-3 test is a combination of on-the-spot scoring and video scoring to ensure the rigor of the test data. Due to time and effort constraints; I will study only the upper extremities, the overhand throw, the underhand throw, the one-handed slap, and the drop-and-catch in place as examples.

2.2.4 Mathematical statistics

The excel system was used to summarize and make statistics on the data. The individual score was the average of the three testers, and the maximum value, average, standard deviation and correlation analysis of each overall score were found out to find out the difference in upper limb development of children of different genders. The test data were compared and analyzed with the standard indicators of different genders at this age. Finally, the integrated data for statistics and explanation.

3. Results and analysis

3.1 The basic situation of this index of children's test subjects

Table 1: Basic situation of overhand pitching score of male and female children aged 5 to 6 in senior class.

Gender	Top grades	Minimum grade	Average	Standard Deviation
female	4.25	1.75	3.28	0.52
male	4.5	2.25	3.56	0.49

Children's overhand throwing motion is also known as tennis throwing distance. The five-point scoring method is used to score children's overhand throwing motion. It can be seen that the overall performance of male children's overhand throwing motion is slightly higher than that of female children, and with the gradual increase of age, the throwing score will increase with the increase of movement score.

The highest score and average score of boys' overhand throwing motion are higher than those of girls. In general, as can be seen from the Table 1, there is little difference between boys and girls. Among the scores of these five movements, pulling back the big arm and stretching the shoulder scores the least. It is difficult for children to notice this detail, so the whole body is not coordinated, and the distance of throwing is naturally not ideal; Secondly, the time and uprightness of the ball are also less, and the situation of older children will be better, and the final score of throwing distance will be higher.

3.2 Developmental characteristics of children's underhand throwing motion

3.2.1 Basic information of this index of children's test subjects

Table 2: Basic situation of underhand ball scoring of male and female children aged 5 to 6 in senior class.

Gender	Top grades	Minimum grade	Average	Standard deviation
female	4	2.25	3.32	0.53
male	4	2.75	3.5	0.29

The scoring method of five-point system is used to score the underhand throwing motion of children. As can be seen from the figure above, the underhand throwing motion score of boys is generally higher than that of girls, but there are also special cases, as shown in Table 2. The lowest score of girls is lower than that of boys, but the highest score is the same, so the development of girls is stratified, and the span is relatively large. The average score of boys is higher than the average score of girls, so the overall score of boys is slightly better than that of girls, but the difference is not large. In the movement test, the center of gravity is between the two feet, and this movement standard gets the highest score. Basically, every child will do this for the coordination and balance of the body, indicating that it conforms to the natural law of normal development. Among them, the item with suitable height of hand gets the lowest score. The play is also very unstable, so when improving the movement development of children, it is necessary to focus on this point to explain in detail.

3.3 Characteristics of children's catching movement development

3.3.1 Basic information of this index of children's test subjects

Table 3: Basic situation of receiving score of male and female children aged 5 to 6 in senior class.

Gender	Highest score	Minimum grade	Average	Standard Deviation
female	3.75	2	3.17	0.49
male	4	2.25	3.14	0.58

Using the five-point scoring method to score the children's self-throwing and self-catching action, it can be seen that the score of self-throwing and self-catching action shows an increasing trend with age. Among them, the highest and lowest scores of girls are lower than boys, but the average of girls is higher than that of boys, as shown in Table 3. It can be seen that the overall development of girls' movement is relatively stable, while the score span of boys is larger, indicating that the development of this movement is fast or slow. Among them, in the process of testing, prepare the action: Two feet naturally open shoulder width, two knees slightly bent this action standard, basically every child can reach, and the hip knee ankle is also more coordinated, but when the ball falls, children may be afraid of the ball hit their own reasons, dare not go up to catch, or when throwing up there is no consciousness of throwing directly above the head, so the overall score is poor.

3.4 Development characteristics of children's one-handed patting action

3.4.1 Basic information of this index in children's test subjects

Table 4: Basic information of one-handed racket score of male and female children aged 5 to 6 in senior class.

Gender	Top grades	Minimum grade	Average	Standard Deviation
female	4	2.25	3.33	0.5
male	4.5	2.25	3.54	0.47

Using the five-point scoring method to score children's one-hand racket, it can be seen that the highest score and average score of boys are slightly higher than that of girls, and the score of the lowest score is the same, indicating that there is no obvious difference in the development of children's movement. It may also be caused by the fact that male children have more muscle content in their upper limbs, because we have previously analyzed that the height and weight development of female children is slightly faster than that of male children, but there is no significant difference. With the increase of age, the gap between the two will gradually decrease, as shown in Table 4. In the movement test, it is found that the feet are basically immobile, which few children can do, which indicates that the overall coordination of children and the ability to control objects need to be further improved. In addition, most children are passive when they bat the ball, chase the ball and run, and the bouncing height of the ball is getting lower and lower,

which indicates that there are problems in the power mode of children. After the careful explanation of professional teachers, children's test level will surely improve^[3].

4. Overall analysis and countermeasures of children's movement test results

4.1 Overall analysis of test results

Table 5: Basic situation of overall scores of male and female children aged 5 to 6 in senior class.

Action Score	Max	Minimum	Standard deviation	Mean value
Overhand pitching	4.5	1.75	0.45	3.43
Underhand pitching	4	2.25	0.43	3.41
Catching the ball	4	2	0.59	3.15
Bounce the ball with one hand	4.5	2.25	0.5	3.45

As can be seen from the Table 5 above, the score span of overhand pitching movement is the largest, the highest score of 4.5, is the highest, while the lowest score of 1.75 is also the lowest, indicating that the overhand pitching movement at both ends of the differentiation is more serious, but also closely related to children's play. The lowest average of self-throwing and self-catching indicates that the overall situation of children's movement development is low. Relevant professional teachers should pay attention to this point.

Movement development is related to age. The older you are, the more mature you are and the higher the level of motor development^[4].

The motor development of the children in the kindergarten affiliated to Henan Polytechnic University is at a good level; Among them, children's movement score of catching ball is generally low, indicating that children's movement skill is not firmly mastered on the whole; The score of overhand pitching action shows the phenomenon of polarization, the score span is large, and the overall development situation is unstable; The development of other movements is relatively stable.

The movement scores of children aged 5 to 6 in kindergarten showed a gradual increasing trend with the growth of age^[5], indicating that the movement development of children is affected by age to a certain extent, but age is not the only benchmark that affects movement development.

Due to the differences among children, the movement development of some children is lagging behind, and the movement development level of female children is slower than that of male children, most of them are still at a low level. With the growth of age, the gap between male and female children's movement development level is gradually narrowing. In general, the developmental level of male children's throwing movement is better than that of female children^[6].

After the comparison of the situation before and after the correction, after the detailed explanation of the position of throwing the ball, most of the children can actively improve the final stage of exertion, participate in flexion and extension, push and stretch, coordinate the force of the whole body muscles, so that the children can throw the ball in the optimal position, and the score of both movement and throwing has been significantly improved^[7].

4.2 Analysis of the main causes

4.2.1 Influence of physiological maturity on motor development of young children

Physiological maturity is the biological premise and material basis of children's motor development. Through investigation and interviews with relevant professionals, it is known that a small number of mothers will do training and exercise related to children's motor development during pregnancy, while a large number of parents do not have this awareness. With the continuous physiological maturity, the motor development of children is gradually improved, and different physiological maturity is the factor that leads to the individual differences of children. Nutrition factors also have a significant impact on physiological development and maturity. With the improvement of productivity level, the malnutrition phenomenon of children is gradually reduced, but most children are overnourished, eat more and exercise less. And eat food with high hormone content, height and weight grow faster, but the motor development is extremely immature, so in the assessment of motor development, height, weight, age and other comprehensive growth situation should be taken into account.

4.2.2 The influence of family education on children's motor development

Environmental factors are important factors affecting children's motor development. Parents who have the awareness of children's movement development will pay attention to the situation of children's movement development, conduct early training and education for children, and promote children's movement development; However, there are some parents of young children due to the lack of children at home, excessive indulgence of children, excessive intervention in the exercise of children, do not let it play freely, lest the child be injured, but also lead to the postnatal movement development is not comprehensive, and other children have a gap.

4.2.3 The influence of children's own subjective initiative on movement development

Movement development is related to children's understanding of the external environment. For example, in the test of self-throwing and self-catching, some children dare not to boldly try because of fear. Therefore, children's subjective initiative has a certain impact on movement development, and parents and teachers must actively guide them.

4.2.4 Influence of social environment factors on movement development

Some kindergartens do not have professional PE teachers, that is, sports game classes are conducted by class teachers, and they lack facilities and equipment for exercise movement development, which fails to provide a good environment for children's movement development. On the other hand, the emergence of mobile phones and other electronic products has played a more important impact on children's movement development. Many children's entertainment is to play electronic games and brush entertainment videos, which has a negative impact on children's movement development and physical and mental health development. With the acceleration of the pace of life and the upgrading of transportation, people's physical activity is less and less, the muscles cannot get the corresponding exercise, and the movement development situation is more and more not optimistic.

4.3 Relevant Countermeasures

4.3.1 Family upbringing

Parents should first pay attention to the way of parenting, cannot overindulge, when the child wants to try new things, to actively encourage and protect, rather than directly stop, kill the child's curiosity; To ensure that the child adequate nutrition, and pay attention to the diet, try not to let the child eat fried, puffed and other junk food, cannot let the child overnutrition, to eat regularly, eat and drink degree; If the time is not particularly tight, you can use walking, cycling and other ways to go out, so that children participate in sports more, less play mobile phones and other electronic products, so that the lifestyle slow down, so that children to perceive the world.

4.3.2 Learning and training

If parents think that the motor development of children is relatively lacking, they can report to the relevant training institutions for their children to conduct professional motor development training, so that the child's motor development is more scientific and more comprehensive. Kindergarten teachers must actively improve the knowledge of movement development, so that children can exercise when they are entertained and improve in exercise. Parents should supervise their children, it is best to work out a specific exercise plan, including the frequency of exercise and the time and content of exercise, so that children can develop good habits of exercise themselves.

4.3.3 Children's own aspects

Parents should guide their children to take care of themselves, let their children do everything, instead of acting on their own behalf, do good places to encourage in time, do not do good places to be patient to tell children clearly. You can also let children participate in housework, such as picking up their toys, practicing eating with chopsticks, helping to take things, picking vegetables, etc., can cultivate children's hands-on ability and increase children's sense of participation.

5. Conclusions and Suggestions

5.1 Conclusions

First, the motor development of the children in the kindergarten affiliated to Henan Polytechnic

University is at a good level.

Second, the basic situation of motor scores of children aged 5 to 6 years old gradually increases with age, indicating that the motor development of children is affected by age to a certain extent, but age is not the only benchmark that affects motor development.

Thirdly, due to the differences between children, the movement development of children is stratified. Some children's movement development lags behind, while female children's movement development level is relatively slow, most of them are in the middle and primary level stage. With the growth of age, the gap between male and female children's movement development level is gradually narrowing. In general, the developmental level of male children's throwing movement is superior to that of female children.

Fourthly, after the comparison of the situation before and after the correction, after the detailed explanation of the position of throwing the ball, most of the children can actively improve the final stage of exertion, participate in flexion and extension, push and stretch, coordinate the force of the whole body muscles, so that the children can throw the ball in the optimal position, and the score of both movement and throwing has been significantly improved.

5.2 Suggestions

5.2.1 Parent level

First of all, parents must pay attention to the motor development of children. Only by deeply understanding the good and bad of motor development of children, recognizing the current situation of muscle motor development and understanding the level of muscle development of children at this age, can they also report to the relevant motor development training institutions for children, and the teachers of the training institutions will conduct professional training for children. To be able to find the reasons leading to the uneven development of muscle movement development, and to find solutions for these reasons, and ultimately enable children to develop healthily.

5.2.2 Kindergarten level

As far as the kindergarten curriculum is concerned, the relevant teaching concepts of motor development are very vague, which hinders the development of muscle movement of most children. It is hoped that the training and learning of motor development of children can be further strengthened in the future, and corresponding guidance should be given to children at different stages of development, and symmetrical exercises should be paid attention to. In order to continue to strengthen the concept of movement development of kindergarten teachers, it is best to be taught by kindergarten teachers who have received formal training, and increase the theoretical knowledge of the teachers about children's movement development. Enrich the physical education curriculum of each class, contact relevant experts to conduct scientific research in this area, develop games that are conducive to the development of children's movement, add basic movement-related education to the textbooks as much as possible, fully mobilize children's interest in physical exercise, organize teachers to hold themed class meetings for parents, and improve parents' attention to the development of children's movement.

5.2.3 Community level

The community should add more facilities and equipment suitable for children's motor development, set up practice paths to promote motor development, and enrich children's extracurricular sports activities; In addition, it is suggested that some newly built supermarkets, restaurants and play areas of children's entertainment places should be changed into scientific facilities for training children's movement development, so as to improve children's interest in activities and stimulate children's sports potential.

5.2.4 National level

The government and even the country should introduce more policies and measures related to children's motor development, encourage experts and researchers in relevant fields to conduct in-depth studies, and increase the corresponding rewards. In addition, the relevant departments should also do a good job in promotion and increase the advertising to improve the motor development of children. The research on the motor development of children can lay a solid foundation for the future development of children, and is more conducive to people's research on the development process of human movement. It is hoped that other relevant researchers can continue to conduct in-depth research and improvement on this basis from different details in the future, and make greater contributions to the development of human movement. Due to the impact of the epidemic, and limited time and energy, it is hoped that in the future

test studies of other motor skills, specific tracking studies can be carried out in the specified area, so as to make the measured results more accurate and scientific.

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